DEPARTMENTS OF THE ARMY AND AIR FORCE
NATIONAL GUARD BUREAU
U.S. PROPERTY AND FISCAL OFFICER FOR VIRGINIA
Building #316, Fort Pickett, Blackstone, Virginia 23824-6316

09 June 2010

REPLY TO
ATTENTION OF

US Property and Fiscal Office

Ms. Leah R. Revelle
Water Compliance Engineer
Virginia Department of Environmental Quality
South Central Regional Office
7705 Timberlake Road
Lynchburg, VA 24502

Dear Ms Revelle:

The Maneuver Training Center-Fort Pickett (MTC) is requesting a revoke and reissue to its' current Virginia Pollution Distribution Elimination Permit number VA0091766, effective date April 5, 2006, Expiration Date April 4, 2011. We have included the permit modification fee of $3300.00 by interagency transfer and completed the *Environmental Protection Agency, Form 2C, Application For Permit To Discharge Wastewater Existing Manufacturing, Commercial, Mining and Silvicutlral Operations*. The requested revoke and reissue deals with the following items:

(1) The installation is requesting an additional four (4) outfalls at the Float Engineer Bridge Pond. The outfalls will have the same discharge characteristics as the current outfall 001 using the exact same equipment as detailed in the existing permit with the addition of a 150 GPH Light Weight Water Purification System.

(2) The installation will have two sites around the pond specifically set up for this type of operation and will be the primary locations for tactical operations of the 3000/600 GPH Reverse Osmosis Water Purification Units, 1500 GPH Tactical Water Purification Systems and the 150 GPH Light Weight Water Purification System.

(3) The outfall locations detailed on Figures 2 and 3 are very close to the operational positioning of each piece of equipment mentioned on the Form 2C application but can be subject to change during setup operations of the unit during the training cycle. This flexibility will provide a real world tactical scenario for each unit training at MTC Fort Pickett.

If you have any questions, please feel free to call David K. Short at 434-292-2144 or email at david.k.short@us.army.mil .

Sincerely,

Donald R. Sutherland
Colonel, National Guard Bureau
US Property and Fiscal Officer for Virginia

Enclosure

Cc: Mr. David Short, VAARNG-FM-E

ARNG-MTC Fort Pickett

Float Engineer Bridge Pond

ROWPU/TWPS Training Sites

1 inch = 400 feet

Legend

- ROWPU/TWPS Training Sites
- Lakes and Ponds
- Roads

ROWPU - Reverse Osmosis Water Purification Unit

TWPS - Tactical Water Purification System

Data used to create this map provided by the Fort Pickett ITAM/GIS and the VAFM-E GIS offices.

Document Information

Author:	Mark Thomas
Publication Date:	8 June 2010
Document Name:	EngineerBridge.mxd

Gilmore Environmental Consulting, LLC

Float Engineer Bridge Pond

ROWPU/TWPS Training Sites

Figure 1

ARNG-MTC Fort Pickett

Float Engineer Bridge Pond

ROWPU/TWPS Training Site #1

1 inch = 100 feet

- Intake
- Outfall
- ROWPU/TWPS Training Site #1
- Lakes and Ponds

ROWPU - Reverse Osmosis Water Purification Unit

TWPS - Tactical Water Purification System

Data used to create this map provided by the Fort Pickett ITAM/GIS and the VAFM-E GIS offices.

Document Information

Author:	Mark Thomas
Publication Date:	8 June 2010
Document Name:	ROWPU-TWPS-1.mxd

Gilmore Environmental Consulting, LLC

Float Engineer Bridge Pond

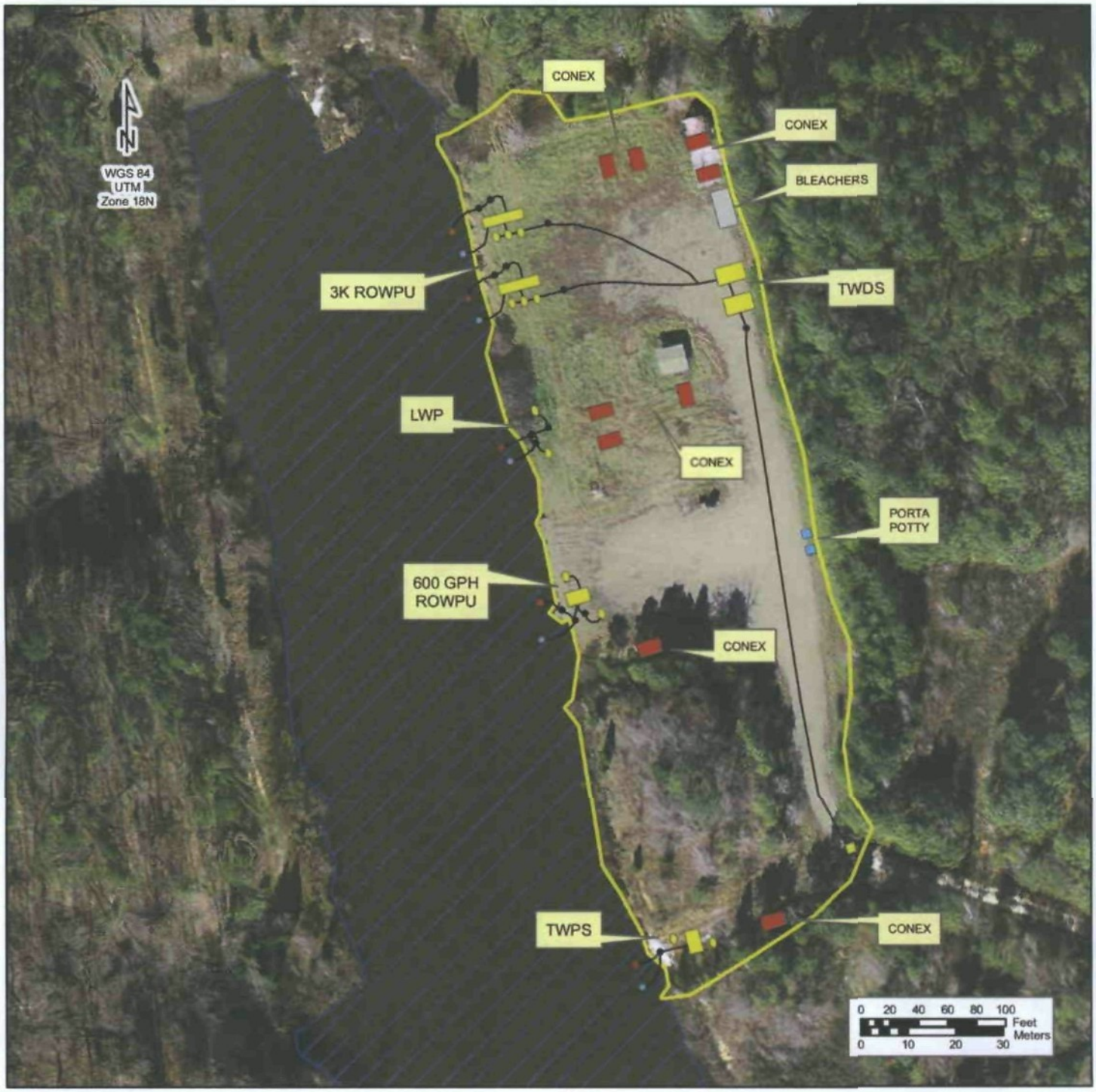
ROWPU/TWPS Training Site #1

Figure 3

ARNG-MTC Fort Pickett

Float Engineer Bridge Pond

ROWPU/TWPS Training Site #2



1 inch = 100 feet

- Intake
- Outfall
- ROWPU/TWPS Training Site #2
- Lakes and Ponds

ROWPU - Reverse Osmosis Water Purification Unit

TWPS - Tactical Water Purification System

Data used to create this map provided by the Fort Pickett ITAM/GIS and the VAFM-E GIS offices.

Document Information

Author:	Mark Thomas
Publication Date:	8 June 2010
Document Name:	ROWPU-TWPS-2.mxd

Gilmore Environmental Consulting, LLC

Float Engineer Bridge Pond

ROWPU/TWPS Training Site #2

Figure 2

Please type or print in the unshaded areas only

EPA ID Number *(Copy from Item 1 of Form 1)*
VAD988228359

Form Approved
OMB No. 2040-0086
Approval expires 7-31-88

Form **2C** NPDES

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICUTLRAL OPERATIONS
Consolidated Permits Program

I. Outfall Location

For this outfall, list the latitude and longitude, and name of the receiving water(s)

Outfall Number *(list)*	Latitude			Longitude			Receiving Water *(name)*
	Deg	Min	Sec	Deg	Min	Sec	
001	***77***	***56***	***13***	***37***	***6***	***31***	***Float Engineer Bridge Pond***
002	***77***	***56***	***13***	***37***	***6***	***31***	***Float Engineer Bridge Pond***
003	***77***	***56***	***13***	***37***	***6***	***31***	***Float Engineer Bridge Pond***
004	***77***	***56***	***13***	***37***	***6***	***31***	***Float Engineer Bridge Pond***
005	***77***	***56***	***13***	***37***	***6***	***31***	***Float Engineer Bridge Pond***

II. Flows, Sources of Pollution, and Treatment Technologies

A. For each outfall, provide a description of (1) all operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and stormwater runoff; (2) the average flow contributed by each operation; and (3) the treatment received by the wastewater. Continue on additional sheets if necessary.

B. For each outfall, provide a description of (1) all operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and stormwater runoff; (2) the average flow contributed by each operation; and (3) the treatment received by the wastewater. Continue on additional sheets if necessary.

1. Outfall Number	2. Operations Contributing Flow		3. Treatment		
	a. OPERATION *(list)*	b. AVERAGE FLOW	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
001	***1500 Tactical Water Purifcation System, 3000 Reverse Osmosis Water Purfication, 150 Light Weight Water Purification System, 600 GPH Reverse Osmosis Water Purification System***	***70 to 120 GPM on backwash to the source. This lasts only one hour for the 3000, 600 and 150 ROWPU models. The 1500 TWPS flushes every 45 minutes of operation time.***	***Water Purification Training***	***4A***	
002	***1500 Tactical Water Purifcation System, 3000 Reverse Osmosis Water Purfication, 150 Light Weight Water Purification System, 600 GPH Reverse Osmosis Water Purification System3000 Reverse Osmosis Water Purification***	***70 to 120 GPM on backwash to the source. This lasts only one hour for the 3000, 600 and 150 ROWPU models. The 1500 TWPS flushes every 45 minutes of operation time.***	***Water Purification Training***	***4A***	

003	*1500 Tactical Water Purifcation System, 3000 Reverse Osmosis Water Purfication, 150 Light Weight Water Purification System, 600 GPH Reverse Osmosis Water Purification SystemLight Weight Water Purification System*	*70 to 120 GPM on backwash to the source. This lasts only one hour for the 3000, 600 and 150 ROWPU models. The 1500 TWPS flushes every 45 minutes of operation time.*	*Water Purification Training*	*4A*	
004	*1500 Tactical Water Purifcation System, 3000 Reverse Osmosis Water Purfication, 150 Light Weight Water Purification System, 600 GPH Reverse Osmosis Water Purification System600 GPH Reverse Water Purfication*	*70 to 120 GPM on backwash to sourc. This lasts only one hour for the 3000, 600 and 150 models. The 1500 flushes every 45 minutes of operation time.*	*Water Purification Training*	*4A*	
005	*Tactical Water Purifcation System, 3000 Reverse Osmosis Water Purfication, 150 Light Weight Water Purification System, 600 GPH Reverse Osmosis Water Purification System3000 Reverse Osmosi Water Purification*	*70 to 120 GPM on backwash to sourc. This lasts only one hour for the 3000, 600 and 150 models. The 1500 flushes every 45 minutes of operation time.*	*Water Purification Training*	*4A*	

CONTINUED FROM THE FRONT

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

☒ **YES** *(complete the following table)* ☐ **NO** *(go to Section III)*

1. OUTFALL NUMBER (list)	2. OPERATION(s) CONTRIBUTING FLOW (list)	3. FREQUENCY a. DAYS PER WEEK (specify average)	3. FREQUENCY b. MONTHS PER YEAR (specify average)	4. FLOW a. FLOW RATE (in mgd) 1. LONG TERM AVERAGE	4. FLOW a. FLOW RATE (in mgd) 2. MAXIMUM DAILY	4. FLOW b. TOTAL VOLUME (specify with units) 1. LONG TERM AVERAGE	4. FLOW b. TOTAL VOLUME (specify with units) 2. MAXIMUM DAILY	4. FLOW c. DURATION (in days)
001	*Reverse Osmosis Equipment (3000, 1500, 600, 150)*	*5*	*12*	*.058*	*.058*	*15.08 MG*	*15.08 MG*	*260*
002	*Reverse Osmosis Equipment (3000, 1500, 600, 150)*	*5*	*12*	*.058*	*.058*	*15.08 MG*	*15.08 MG*	*260*
003	*Reverse Osmosis Equipment (3000, 1500, 600, 150)*	*5*	*12*	*.058*	*.058*	*15.08 MG*	*15.08 MG*	*260*
004	*Reverse Osmosis Equipment (3000, 1500, 600, 150)*	*5*	*12*	*.058*	*.058*	*15.08 MG*	*15.08 MG*	*260*
005	*Reverse Osmosis Equipment (3000, 1500, 600, 150)*	*5*	*12*	*.058*	*.058*	*15.08 MG*	*15.08 MG*	*260*

III. PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

☐ **YES** *(complete Item III-B)* ☒ **NO** *(go to Section IV)*

B. Are the limitations in the applicable effluent guideline expressed in terms of production *(or other measure of operation)*?

☐ **YES** *(complete Item III-C)* ☒ **NO** *(go to Section IV)*

C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. (specify)	2. AFFECTED OUTFALLS (list outfall numbers)

IV. IMPROVEMENTS

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading, or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

☐ **YES** *(complete the following table)* ☒ **NO** *(go to Item IV-B)*

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS a. No	2. AFFECTED OUTFALLS b. SOURCE OF DISCHARGE	3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE a. REQUIRED	4. FINAL COMPLIANCE DATE b. PROJECTED

 CONTINUED ON PAGE 3

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs *(or other environmental projects which may affect your discharges)* you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

☐ **MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAM IS ATTACHED**

 CONTINUED ON PAGE 3

CONTINUED FROM PAGE 2

V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding - Complete one set of tables or each outfall - Annotate the outfall number in the space provided. **NOTE:** Tables V-A, V-B, and V-C are included on separate sheets number V-1 through V-9.

D: Use the space below t list any of the pollutants listed in Tables 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
TSS	***Source Water***		
TDS	***Source Water***		
pH	***Source Water***		
Chlorine	***Additive during Treatment***		
Hardness	***Source Water***		

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ **YES** *(list all such pollutants below)* ☒ **NO** *(go to Item VI-B)*

CONTINUED FROM THE FRONT

VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☐ YES *(identify the test(s) and describe their purpose below)* ☒ NO *(go to Section VIII)*

VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

☒ YES *(list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)* ☐ NO *(go to Section IX)*

A. NAME	B. ADDRESS	C. TELEPHONE *(area code & no.)*	D. POLLUTANTS ANALYZED *(list)*
Air Water and Soil Laboratories, Inc.	***2109 A North Hamilton Street***	***(804) 358-8297***	***TSS, TDS, TPH, Hardness***
		( )	
		( )	
		( )	
		( )	
		( )	
		( )	
		( )	
		( )	
		( )	
		( )	
		( )	
		( )	
		( )	

IX. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. NAME & OFFICIAL TITLE *(type or print)*	B. PHONE NO. *(area code & no.)*
Donald R. Sutherland, Colonel, National Guard Bureau ***Virginia United States Property and Fiscal Officer***	***(434) 298-6161***
C. SIGNATURE *Don Sutherland*	D. DATE SIGNED *10 JUN 10*

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*
VAD988228359

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
a. Biochemical Oxygen Demand *(BOD)*	*2.15*	*mg/L*	*2.15*	*mg/L*	*2.15*	*mg/L*	*002*	*2.15*	*mg/L*			
b. Chemical Oxygen Demand *(COD)*	*36.35*	*mg/L*	*36.35*	*mg/L*	*36.35*	*mg/L*	*002*	*36.35*	*mg/L*			
c. Total Organic Carbon *(TOC)*	*12.85*	*mg/L*	*12.85*	*mg/L*	*12.85*	*mg/L*	*002*	*12.85*	*mg/L*			
d. Total Suspended Solids *(TSS)*	*2.2*	*mg/L*	*2.2*	*mg/L*	*2.2*	*mg/L*	*002*	*2.2*	*mg/L*			
e. Ammonia *(as N)*	*.1*	*mg/L*	*.1*	*mg/L*	*.1*	*mg/L*	*002*	*.1*	*mg/L*			
f. Flow	Value *.07 mgd*		Value *.07 mgd*		Value *.07 mgd*		*002*	*.07*	*mgd*	Value		
g. Temperature *(winter)*	Value *10*		Value *10*		Value *10*		*002*	°C		Value		
h. Temperature *(summer)*	Value *31*		Value *31*		Value *31*		*002*	°C		Value		
i. pH	Minimum *6*	Maximum *9*	Minimum	Maximum			*SU*	STANDARD UNTIS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitation guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'		2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
a. Bromide (24959-67-9)	☒	☐	*1*	*mg/L*	*1*	*mg/L*	*1*	*mg/L*	*002*	*1*	*mg/L*			
b. Chlorine, Total Residual	☒	☐	*2*	*mg/L*	*2*	*mg/L*	*2*	*mg/L*	*002*	*2*	*mg/L*			
c. Color	☒	☐	*125*	*ADMI*	*125*	*AMDI*	*125*	*AMDI*	*002*	*125*	*AMDI*			
d. Fecal Coliform	☒	☐	*6.5*	*11 mpn/ 100 ml*	*6.5*	*11 mpn/ 100 ml*	*6.5*	*11 mpn/ 100 ml*	*002*	*6.5*	*11 mpn/ 100 ml*			
e. Fluoride (16984-48-8)	☒	☐	*.15*	*mg/L*	*.15*	*mg/L*	*.15*	*mg/L*	*002*	*.15*	*mg/L*			
f. Nitrate-Nitrite *(as N)*	☒	☐	*.1*	*mg/L*	*.1*	*mg/L*	*.1*	*mg/L*	*002*	*.1*	*mg/L*			

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'		2. EFFLUENT						d. NO. OF ANALYSIS	3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*			a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic *(as N)*	☒	☐	.6	mg/L	.6	mg/L	.6	mg/L	002	.6	mg/L			
h. Oil and Grease	☒	☐	10	mg/L	10	mg/L	10	mg/L	002	10	mg/L			
i. Phosphorus *(as P)*, Total (7723-14-0)	☒	☐	.055	mg/L	.055	mg/L	.055	mg/L	002	.055	mg/L			
j. Radioactivity														
(1) Alpha, Total	☐	☒												
(2) Bets, Total	☐	☒												
(3) Radium, Total	☐	☒												
(4) Radium 226, Total	☐	☒												
k. Sulfate *(as SO_4) (14808-79-8)*	☐	☒												
l. Sulfide (as S)	☐	☒												
m. Sulfite *(as SO_3)(14265-45-3)*	☐	☒												
n. Surfactants	☐	☒												
o. Aluminum, Total (7429-90-5)	☒	☐	1.1	mg/L	1.1	mg/L	1.1	mg/L	002	1.1	mg/L			
p. Barium, Total (7440-39-3)	☒	☐	.05	mg/L	.05	mg/L	.05	mg/L	002	.05	mg/L			
q. Boron, Total (7440-42-8)	☒	☐	.05	mg/L	.05	mg/L	.05	mg/L	002	.05	mg/L			
r. Cobalt, Total (7440-48-4)	☒	☐	.01	mg/L	.01	mg/L	.01	mg/L	002	.01	mg/L			
s. Iron, Total (7439-89-4)	☒	☐	1.7	mg/L	1.7	mg/L	1.7	mg/L	002	1.7	mg/L			
t. Magnesium, Total (7439-95-4)	☒	☐	4.0	mg/L	4.0	mg/L	4.0	mg/L	002	4.0	mg/L			
u. Molybdenum, Total (7439-98-7)	☒	☐	.05	mg/L	.05	mg/L	.05	mg/L	002	.05	mg/L			
v. Manganese, Total (7439-96-5)	☒	☐	.16	mg/L	.16	mg/L	.16	mg/L	002	.16	mg/L			
w. Tin, Total (7440-31-5)	☒	☐	.02	mg/L	.02	mg/L	.02	mg/L	002	.02	mg/L			
x. Titanium, Total (7440-32-6)	☒	☐	.05	mg/L	.05	mg/L	.05	mg/L	002	.05	mg/L			

CONTINUE ON PAGE V-3

CONTINUED FROM PAGE 3 OF FORM 2-C

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
VAD988228359	

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and non-required GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant. If you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1m. Antimony, Total (7440-36-0)	☐	☒	☐	.005	mg/L	.005	mg/L	.005	mg/L	002	.005	mg/L			
2M. Arsenic, Total (7440-38-2)	☐	☒	☐	.005	mg/L	.005	mg/L	.005	mg/L	002	.005	mg/L			
3M. Beryllium, Total (7440-41-7)	☐	☒	☐	.0005	mg/L	.0005	mg/L	.0005	mg/L	002	.0005	mg/L			
4M. Cadmium, Total (7440-43-9)	☐	☒	☐	.0003	mg/L	.0003	mg/L	.0003	mg/L	002	.0003	mg/L			
5M Chromium, Total (7440-47-3)	☐	☒	☐	.0012	mg/L	.0012	mg/L	.0012	mg/L	002	.0012	mg/L			
6M Copper, Total (7440-50-8)	☐	☒	☐	.0300	mg/L	.0300	mg/L	.0300	mg/L	002	.0300	mg/L			
7M lead, Total (7439-92-1)	☐	☒	☐	.0127	mg/L	.0127	mg/L	.0127	mg/L	002	.0127	mg/L			
8M Mercury, Total (7439-97-6)	☐	☒	☐	.0002	mg/L	.0002	mg/L	.0002	mg/L	002	.0002	mg/L			
9M Nickel, Total (7440-02-0)	☐	☒	☐	.0107	mg/L	.0107	mg/L	.0107	mg/L	002	.0107	mg/L			
10M Selenium, Total (7782-49-2)	☐	☒	☐	.003	mg/L	.003	mg/L	.003	mg/L	002	.003	mg/L			
11M Silver, Total (7440-22-4)	☐	☒	☐	.01	mg/L	.01	mg/L	.01	mg/L	002	.01	mg/L			
12M Thallium, Total (7440-28-0)	☐	☒	☐	.05	mg/L	.05	mg/L	.05	mg/L	002	.05	mg/L			
13M Zinc, Total (7440-66-6)	☐	☒	☐	.0203	mg/L	.0203	mg/L	.0203	mg/L	002	.0203	mg/L			
14M Cyanide, Total (57-12-5)	☐	☒	☐	.01	mg/L	.01	mg/L	.01	mg/L	002	.01	mg/L			
15M Phenols, Total	☐	☐	☒												
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764-01-6)	☐	☐	☒	DESCRIBE RESULTS											

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	☐	☐	☒												
2V Acrylonitrile (107-13-1)	☐	☐	☒												
3V Benzene (71-43-2)	☐	☐	☒												
4V Bis *(Chloromethyl)* Ether (542-88-1)	☐	☐	☒												
5V Bromoform (75-25-2)	☐	☐	☒												
6V Carbon Tetrachloride (56-23-5)	☐	☐	☒												
7V Chlorobenzene (108-90-7)	☐	☐	☒												
8V Chlorodibromomethane (124-48-1)	☐	☐	☒												
9V Chloroethane (75-00-3)	☐	☐	☒												
10V 2-Chloroethylvinyl Ether (110-75-8)	☐	☐	☒												
11V Chloroform (67-66-3)	☐	☐	☒												
12V Dichlorobromoethane (75-71-8)	☐	☐	☒												
13V Dichlorodifluoromethane (75-71-8)	☐	☐	☒												
14V 1,1-Dichloroethane (75-34-3)	☐	☐	☒												
15V 1,2-Dichloroethane (107-06-2)	☐	☐	☒												
16V 1,1-Dichloroethylene (75335-4)	☐	☐	☒												
17V 1,2-Dichloropropane (78-87-5)	☐	☐	☒												
18V 1,3-Dichloropropylene (542-76-6)	☐	☐	☒												
19V Ethylbenzene (100-41-4)	☐	☐	☒												
20V Methyl Bromide (74-83-9)	☐	☐	☒												
21V Methyl Chloride (74-87-3)	☐	☐	☒												

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EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: *VAD988228359*

OUTFALL NUMBER:

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS *(continued)*															
22 V Methylene Chloride (75-09-2)	☐	☐	☒												
23V 1,1,2,2-Tetrachloroethane (79-34-5)	☐	☐	☒												
24V Tetrachloroethylene (127-18-4)	☐	☐	☒												
25V Toluene (108-88-3)	☐	☐	☒												
26V 1,2-Trans-Dichloroethylene (156-60-5)	☐	☐	☒												
27V 1,1,1-Trichloroethane (71-55-6)	☐	☐	☒												
28V 1,1,2-Trichloroethane (79-00-5)	☐	☐	☒												
29V Trichloroethylene (79-01-6)	☐	☐	☒												
30V Trichlorofluoromethane (75-69-4)	☐	☐	☒												
31V Vinyl Chloride (75-01-4)	☐	☐	☒												
GC/MS FRACTION - ACID COMPOUNDS															
1A 2-Chlorophenol (95-57-8)	☐	☐	☒												
2A 2,4-Dichlorophenol (120-83-2)	☐	☐	☒												
3A 2,4-Dimethylphenol (105-67-9)	☐	☐	☒												
4A 4,6-Dinitro-O-cresol (534-52-1)	☐	☐	☒												
5A 2,4-Dinitrophenol (51-28-5)	☐	☐	☒												
6A 2-Nitrophenol (88-75-5)	☐	☐	☒												
7A 4-Nitrophenol (100-02-7)	☐	☐	☒												
8A P-Chloro-M-Cresol (59-50-7)	☐	☐	☒												
9A Pentachlorophenol (87-86-5)	☐	☐	☒												
10A Phenol (10/-95-2)	☐	☐	☒												
11A 2,4,6-Trichlorophenol (88-06-2)	☐	☐	☒												

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B Acenphthene (83-32-9)	☐	☐	☒												
2B Acenaphtylene (208-96-8)	☐	☐	☒												
3B Anthracene (120-12-7)	☐	☐	☒												
4B Benzidine (92-87-5)	☐	☐	☒												
5B Benzo (a) Anthracene (56-55-3)	☐	☐	☒												
6B Benzo (a) Pyrene (50-32-8)	☐	☐	☒												
7B 3,4-Benzofluoranthene (205-99-2)	☐	☐	☒												
8B Benzo *(ghi)* Perylene (191-24-2)	☐	☐	☒												
9B Benzo *(k)* Fluoranthene (207-08-9)	☐	☐	☒												
10B Bis *(2-Chloroethoxy)* Methane (111-91-1)	☐	☐	☒												
11B Bis *(2-Chloroethyl)* Ether (111-44-4)	☐	☐	☒												
12B Bis *(2-Chloroisepropyl)* Ether (102-60-1	☐	☐	☒												
13B Bis*(2-Ethylhexyl)* Phthalate (117-81-7)	☐	☐	☒												
14 B 4-Bromophenyl Phenyl Ether (101-55-3)	☐	☐	☒												
15B Butyl Benzyl Phthalate (85-68-7)	☐	☐	☒												
16B 2-Chloronaphthalene (91-68-7)	☐	☐	☒												
17B 4-Chlorophenyl Phenyl Ether (7005-72-3)	☐	☐	☒												
18B Chrysene (218-01-9)	☐	☐	☒												
19B Dibenzo *(a,h)* Anthracene (53-70-3)	☐	☐	☒												
20B 1,2-Dichlorobenzene (95-50-1)	☐	☐	☒												
21B 1,3-Dichlorobenzene (541-73-1)	☐	☐	☒												

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EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: *VAD988228359*

OUTFALL NUMBER:

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT						d. NO. OF ANALYSIS	3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*			a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - BASE/NEUTRAL COMPOUNDS *(continued)*															
22B 1,4-Dichlorobenzene (106-46-7)	☐	☐	☒												
23B 3,3'-Dichlorobenzidine (91-94-1)	☐	☐	☒												
24B Diethyl Phthalate (84-66-2)	☐	☐	☒												
25B Dimethyl Phthalate (131-11-3)	☐	☐	☒												
26B Di-N-Butyl Phthalate (131-11-3)	☐	☐	☒												
27B 2,4-Dinitrotoluene (121-14-2)	☐	☐	☒												
28B 2,6-Dinitrotoluene (606-20-2)	☐	☐	☒												
29B Di-N-Octyl Phthalate (117-84-0)	☐	☐	☒												
30B 1,2-Diphenylhydrazine *(as Azo-benzene)* (122-66-7)	☐	☐	☒												
31B Fluoranthene (206-44-0)	☐	☐	☒												
32B Fluorene (86-73-7)	☐	☐	☒												
33B Hexachlorobenzene (118-74-1)	☐	☐	☒												
34B Hexachlorobutadiene (87-68-3)	☐	☐	☒												
35B Hexachlorocyclopentadiene (77-47-4)	☐	☐	☒												
36B Hexachloroethane (67-72-1)	☐	☐	☒												
37B Indeno *(1,2,3-cd)* Pyrene (193-39-5)	☐	☐	☒												
38B Isophorone (78-59-1)	☐	☐	☒												
39B Napthalene (91-20-3)	☐	☐	☒												
40B Nitrobenzene (98-95-3)	☐	☐	☒												
41B N-Nitrosodimethylamine (62-75-9)	☐	☐	☒												
42B N-Nitrosdi-N-Propylamine (621-64-7)	☐	☐	☒												

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT						d. NO. OF ANALYSIS	3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*			a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS *(continued)*															
43B N-Nitrosodiphenylamine (86-30-6)	☐	☐	☒												
44B Phenanthrene (85-01-/	☐	☐	☒												
45B Pyrene (129-00-0)	☐	☐	☒												
46B 1,2,4-Trichlorobenzene (120-82-1)	☐	☐	☒												
GC/MS FRACTION - PESTICIDES															
1P Aldrin (309-00-2)	☐	☐	☒												
2P β-Bhc (319-85-7)	☐	☐	☒												
4P γ-BHC (58-89-9)	☐	☐	☒												
5P δ-BHC (319-86-8)	☐	☐	☒												
6P Chlordane (57-74-9)	☐	☐	☒												
7P 4,4'-DDT (50-29-3)	☐	☐	☒												
8P 4,4'-DDE (72-55-9)	☐	☐	☒												
9P 4,4'-DDD (72-54-8)	☐	☐	☒												
10P Dieldrin (60-57-1)	☐	☐	☒												
11P α-Endosulfan (115-29-7)	☐	☐	☒												
12P β-Endosulfan (115-29-7	☐	☐	☒												
13P Endosulfan Sulfate (1031-07-8)	☐	☐	☒												
14P Endrin (72-20-8)	☐	☐	☒												
15P Endrin Aldehyde (7421-93-4)	☐	☐	☒												
16P Heptachlor (76-44-8)	☐	☐	☒												

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EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: *VAD988228359*

OUTFALL NUMBER:

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	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*			a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - PESTICIDES *(continued)*															
17P Heptachlor Expxide (1024-57-3)	☐	☐	☒												
18P PCB-1242 (53469-21-9)	☐	☐	☒												
19P PCB-1254 (11097-69-1)	☐	☐	☒												
20P PCB-1221 (11104-28-2)	☐	☐	☒												
21P PCB-1232 (11141-16-5)	☐	☐	☒												
22P PCB-1248 (12672-29-6)	☐	☐	☒												
23P PCB-1260 (11096-82-5)	☐	☐	☒												
24P PCB-1016 (12674-11-2)	☐	☐	☒												
25P Toxaphene (8001-35-2)	☐	☐	☒												

aqua-chem, Inc.
Water Technologies Division

MATERIAL SAFETY DATA SHEET

COMPLIES WITH OSHA HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200

Chemical Emergency Telephone Numbers: AQUA-CHEM, INC.: (866) 544-2065
CHEMTREC (24 Hour): (703) 527-3887 or (800) 424-9300

Effective: 31/May/02
Supersedes:

AC-110

1. INGREDIENTS/APPLICATION

AC-110 Anti Scalant, RO feedwater treatment for scale control
Synonyms: Antiscalant, Dispersant
Aqua-Chem Part Numbers: 603-7885 1 gal Bottle, 603-7888 Box of 2 Bottles
OSHA PEL: Not Available
ACHIH TLV: Not Available
Other Exposure Limits: None Available
CAS No.: Not Applicable

2. PHYSICAL DATA

Boiling Point: 100° C
Freezing Point: 0° C
Vapor Pressure: 18 mm (Hg) @ 20° C
Vapor Density (Air = 1): Not Available
Solubility in Water: Complete
Specific Gravity (Water = 1): 1.14
pH: 2-3
Appearance: Clear amber solution.
Odor: Slight amine odor.

Post-it® Fax Note 7671 | Date | # of pages ▶ 2
To TAMMY TORRETT | From MARK FRANKEL
Co./Dept. DRS | Co. AQUA-CHEM
Phone # | Phone #
Fax # 757-422-7733 | Fax #

3. FIRE AND EXPLOSION DATA

Flash Point: Not Flammable
Flammable Limits: Not Flammable
Auto-Ignition: Not Applicable, water solution
Extinguisher Media: Water, CO_2, Foam
Special Fire Fighting Procedures: Respiratory protection is required when fighting fire.
Unusual Fire and Explosion Hazards: Product is not flammable but will decompose in fire. Decomposition products may be toxic.

4. REACTIVITY DATA

Stability: Normally stable
Incompatibility (Materials to Avoid): Strong bases and oxidizing agents
Hazardous Decomposition Products: carbon monoxide and carbon dioxide and oxides of phosphorus may be produced in the presence of heat after water is removed.
Hazardous Polymerization: Will not occur

5. HEALTH HAZARDS

Signs and Symptoms of Exposure: Oral ingestion may cause gastrointestinal irritation, nausea or diarrhea. Chemical irritates eyes and skin.
Physiological Effects:
Oral: LD_{50}: rat > 5 g/kg
Skin: LD_{50}: rabbit > 5 g/kg
Eye: Not available
Medical Conditions Aggravated by Exposure: None known.

AQUA-CHEM, INC. - WATER TECHNOLOGIES DIVISION

Primary Sales Office:
7800 North 113th Street
Milwaukee, Wisconsin 53224 USA
Tel: (414) 358-9500 Fax: (414) 577-2723

Primary Shipping Location:
3001 East Gov. John Sevier Highway
Knoxville, Tennessee 37914 USA
Tel: (865) 544-2065 Fax: (865) 546-4330

Internet: http://www.aqua-chem.com

aqua-chem, Inc.

MATERIAL SAFETY DATA SHEET

COMPLIES WITH OSHA HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200

Chemical Emergency Telephone Numbers: AQUA-CHEM, INC.: (865) 544-2065
CHEMTREC (24 Hour): (703) 527-3887 or (800) 424-9300

Revision: 3
Date: 2006-Nov-10

AC-120

1. INGREDIENTS/APPLICATION

AC-120 Sodium Metabisulfite for Water Dechlorination and Membrane Preservation.
Synonyms: Sodium Metabisulfite
Aqua-Chem Part Numbers: 803-7879 12 oz Plastic Bag, 803-7880 Box of 10 Bags, 803-7892 10 lb Pail
Formula: $Na_2S_2O_5$
OSHA PEL: 5 mg/m^3
ACHIH TLV: 5 mg/m^3
Other Exposure Limits: None Available

CAS No.:			
	Sodium Metabisulfite	7681-57-4	> 98%
	Sodium Sulfite	7757-83-7	< 1.5%

2. PHYSICAL DATA

Boiling Point: Decomposes
Freezing Point: Not Available
Vapor Pressure: Not Applicable
Vapor Density (Air = 1): Not Applicable
Solubility in Water: 39% @ 16° C
Water Content: Anhydrous
Specific Gravity (Water = 1): 1.48 approx.
pH - 1% Solution: 4.3
Appearance: White granular solid
Odor: Sharp sulfur

3. FIRE AND EXPLOSION DATA

Flash Point: Not Applicable
Flammable Limits: Not Flammable
Auto-ignition: Not Applicable
Extinguisher Media: Water, CO_2, Foam
Special Fire Fighting Procedures: Respiratory protection is required when fighting fire.
Unusual Fire and Explosion Hazards: Product decomposes at 150° C releasing oxygen, containers may rupture.

4. REACTIVITY DATA

Stability: Normally stable
Incompatibility (Materials to Avoid): Strong oxidizing agents, acids.
Hazardous Decomposition Products: Sulfur dioxide, sodium sulfide may be produced in the presence of heat.
Hazardous Polymerization: Will not occur
Corrosivity: Not corrosive.

AQUA-CHEM, INC.

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Knoxville, Tennessee 37914 USA
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5. HEALTH HAZARDS

Signs and Symptoms of Exposure: Inhalation of dust can cause gastrointestinal irritation, nausea, or diarrhea. Inhalation causes coughing and irritation of nose, throat and mucous membranes. Chemical may irritate eyes and skin.

Physiological Effects:

Oral: LD_{50}: (rat - oral) - 1131 mg/kg
Skin: Slight irritant
Eye: Irritant

Medical Conditions Aggravated by Exposure: Sulfur dioxide given off by this product may cause breathing difficulties for asthmatics.

6. ROUTES OF ENTRY AND FIRST AID

Inhalation: Remove to fresh air.
Eyes: Immediately flush with water for at least 15 minutes and seek medical attention.
Skin: Wash with mild soap and water, launder clothes.
Ingestion: If conscious, give large amounts of water, then induce vomiting by touching the back of the throat with the finger. Keep head below hips to prevent aspiration of liquid into the lungs.

7. SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Transportation

Designation: No Hazardous Designation
Container: Polyethylene recommended

Storage: Store in tightly closed containers away from water and incompatible materials. Avoid high temperatures. Avoid eye contact and prolonged skin contact.
Other Precautions: Do not breathe dust. Do not taste or swallow. Wash thoroughly after handling and before eating, drinking, or smoking.
Steps to Take in Case of Spill:

Dry: Contain, sweep up and dispose of properly.
Wet: Contain, dilute further with water and flush to sanitary sewer.

Waste Disposal: Sewer, bury or incinerate in approved site in accordance with federal, state, and local regulations.

8. PERSONAL PROTECTION

Ventilation: Normal ventilation usually adequate.
Respiratory Protection: Respirator may be required.
Skin Protection: Rubber or plastic gloves and safety apron recommended.
Eye Protection: Face shield recommended.

9. NOTES

Although the information herein is believed to be correct; Aqua-Chem, Inc. makes no representation as to the completeness or accuracy of this information; and no warranty, expressed or implied, is made. Consult Aqua-Chem, Inc. for further information.

AQUA-CHEM, INC.

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aqua-chem, Inc.

MATERIAL SAFETY DATA SHEET

COMPLIES WITH OSHA HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200

Chemical Emergency Telephone Numbers: AQUA-CHEM, INC.: (865) 544-2065
CHEMTREC (24 Hour): (703) 527-3887 or (800) 424-9300

Revision 3
Date 2006-Nov-06

AC-210

1. INGREDIENTS/APPLICATION

AC-210 Citric Acid granular cleaning agent.
Synonyms: Citric Acid (Anhydrous), 2-Hydroxy-1,2,3-Propane-Tricarboxylic Acid
Aqua-Chem Part Numbers: 803-7875 5 lb Bottle, 803-7876 Box of 4 Bottles
803-7891 20 lb Pail
Formula: $C_6H_8O_7$
OSHA PEL: Not Available, nuisance dust - 15 mg/m^3 total, 5 mg/m^3 respirable
ACHIH TLV: Not Available, nuisance dust - 10 mg/m^3 total, 5 mg/m^3 respirable
Other Exposure Limits: None Available
CAS No.: 77-92-9

2. PHYSICAL DATA

Boiling Point: Decomposes
Freezing Point: 153° C
Vapor Pressure: Not Applicable
Vapor Density (Air = 1): Not Applicable
Solubility in Water: 592 g/l @ 25° C
Water Content: *Anhydrous*
Specific Gravity (Water = 1): 1.542
pH - 1% Solution: 2
Appearance: Fine, white granular crystal
Odor: None

3. FIRE AND EXPLOSION DATA

Flash Point: Not Applicable
Flammable Limits: Not Flammable
Auto-Ignition: Not Applicable
Extinguisher Media: Water, CO_2, Foam
Special Fire Fighting Procedures: Respiratory protection is required when fighting fire.
Unusual Fire and Explosion Hazards: Product is not flammable but will decompose in fire. Decomposition products may be toxic.

4. REACTIVITY DATA

Stability: Normally stable
Incompatibility (Materials to Avoid): Strong oxidizing agents, alkaline chemicals.
Hazardous Decomposition Products: Carbon monoxide and carbon dioxide may be produced in the presence of heat.
Hazardous Polymerization: Will not occur
Corrosivity: Corrosive in hot water solution.

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Knoxville, Tennessee 37914 USA
Tel: (865) 544-2065 Fax: (865) 546-4330

Internet: http://www.aqua-chem.com

5. HEALTH HAZARDS

Signs and Symptoms of Exposure: Oral ingestion may cause gastrointestinal irritation, nausea, or diarrhea. Chemical irritates eyes and skin.

Physiological Effects:

Oral: LD_{50} (rat), 2 g/kg
Skin: Irritant
Eye: Irritant

Medical Conditions Aggravated by Exposure: None known

Carcinogen Listing: None known

6. ROUTES OF ENTRY AND FIRST AID

Inhalation: Remove to fresh air.

Eyes: Immediately flush with water for at least 15 minutes and seek medical attention.

Skin: Wash with mild soap and water, launder clothes.

Ingestion: If conscious, give two glasses of water and seek medical attention. Do not induce vomiting.

7. SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Transportation

Designation: No Hazardous Designation
Container: Polyethylene recommended

Storage: Store in tightly closed containers away from water and incompatible materials. Avoid freezing and high temperatures. Avoid eye contact and prolonged skin contact.

Other Precautions: Do not breathe dust. Do not taste or swallow. Wash thoroughly after handling and before eating, drinking, or smoking.

Steps to Take in Case of Spill:

Dry: Contain, sweep up and dispose of properly.
Wet: Contain, dilute further with water, neutralize with suitable alkaline material such as lime or dilute caustic (20% or less), flush to sanitary sewer.

Waste Disposal: Sewer, bury or incinerate in approved site in accordance with federal, state, and local regulations.

8. PERSONAL PROTECTION

Ventilation: Normal ventilation usually adequate.

Respiratory Protection: Respirator may be required for dust.

Skin Protection: Rubber gloves and safety apron required.

Eye Protection: Face shield or safety goggles required.

9. NOTES

Although the information herein is believed to be correct; Aqua-Chem, Inc. makes no representation as to the completeness or accuracy of this information; and no warranty, expressed or implied, is made. Consult Aqua-Chem, Inc. for further information.

AQUA-CHEM, INC.

3001 East Gov. John Sevier Highway
Knoxville, Tennessee 37914 USA
Tel: (865) 544-2065 Fax: (865) 546-4330

Internet: http://www.aqua-chem.com

aqua-chem, Inc.

MATERIAL SAFETY DATA SHEET

COMPLIES WITH OSHA HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200

Chemical Emergency Telephone Numbers: AQUA-CHEM, INC.: (865) 544-2065
CHEMTREC (24 Hour): (703) 527-3887 or (800) 424-9300

Revision: 3
Date: 2006-Nov-10

AC-310

1. INGREDIENTS/APPLICATION

AC-310 Detergent (High pH)
Synonyms: Membrane Cleaner (high pH)
Aqua-Chem Part Numbers: 803-7883 1 gal Bottle, 803-7884 Box of 4 Bottles
Components:

CAS	Name
7758-29-4	Sodium Tripolyphosphate
1310-73-2	Sodium Hydroxide (Caustic Soda)
	Trade Secret Additives

OSHA PEL: Not Available
ACGIH TLV: Not Available
Other Exposure Limits: Not Available

2. PHYSICAL DATA

Boiling Point: Not Available
Freezing Point: Not Available
Vapor Pressure: Not Applicable
Vapor Density (Air = 1): Not Applicable
Solubility in Water: 5%
Water Content: 0%
Specific Gravity (Water = 1): Not Available
pH of a 2% Solution: 11
Appearance: White to Off-White Powder
Odor: Slight

3. FIRE AND EXPLOSION DATA

Flash Point: > 200F
Flammable Limits: Not Applicable
Auto-Ignition: Not Applicable
Extinguisher Media: Dry chemical, carbon dioxide, foam or water.
Special Fire Fighting Procedures: Fire fighters should wear respirators
Unusual Fire and Explosion Hazards: Thermal decomposition yields elemental oxides.

4. REACTIVITY DATA

Stability: Normally stable
Incompatibility (Materials to Avoid): Strong acids.
Hazardous Decomposition Products: Thermal decomposition (in fire) yields elemental oxides.
Hazardous Polymerization: Will not occur
Corrosivity: Mild irritant to skin.

5. HEALTH HAZARDS

Signs and Symptoms of Exposure:
Inhalation: Inhalation of dust can cause irritation to the upper respiratory tract.
Eyes: Major Potential Hazard – severe irritant to eyes.

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Skin: Slight irritant to skin.
Ingestion: Can cause gastrointestinal irritation.
Physiological Effects:
Oral: LD_{50}: Not Available
Skin: Slight Irritant
Eye: Severe Irritant
Medical Conditions Aggravated by Exposure: None known
Carcinogen Listing: None known

6. ROUTES OF ENTRY AND FIRST AID

Inhalation: Remove to fresh air.
Eyes: Immediately flush with water for at least 15 minutes and seek medical attention.
Skin: Flush exposed area with large amount of water; launder clothing.
Ingestion: If conscious, dilute with 3 to 4 glasses of milk or water. Seek medical attention. Do not induce vomiting.

7. SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Transportation
Designation: Oxidizing Solid, Corrosive - UN3085
Corrosive to Aluminum
Container: Polyethylene recommended
Storage: Store in tightly closed containers away from water and incompatible materials. Avoid high temperatures. Avoid eye and skin contact.
Other Precautions: Do not breathe dust. Do not taste or swallow. Wash thoroughly after handling and before eating, drinking, or smoking.
Steps to Take in Case of Spill:
Dry: Contain, sweep up and dispose of properly.
Wet: Contain, dilute further with water and flush to sanitary sewer.
Waste Disposal: Dispose of in accordance with federal, state, and local regulations.

8. PERSONAL PROTECTION

Ventilation: Normal ventilation usually adequate.
Respiratory Protection: Respirator or mask recommended for dust.
Skin Protection: Rubber gloves and safety apron recommended.
Eye Protection: Face shield and safety goggles recommended.

9. NOTES

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aqua-chem, Inc.

MATERIAL SAFETY DATA SHEET

COMPLIES WITH OSHA HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200

Chemical Emergency Telephone Numbers: AQUA-CHEM, INC.: (865) 544-2065
CHEMTREC (24 Hour): (703) 527-3887 or (800) 424-9300

1. INGREDIENTS/APPLICATION

AC-350 Caustic 50% (Sodium Hydroxide)
Synonyms: Caustic Soda 50%, Lye
Aqua-Chem Part Numbers: 803-7887 1 gal Bottle, 803-7888 Box of 4 Bottles
Formula: NaOH
OSHA PEL: 2 mg/m3, Ceiling
ACGIH TLV: 2 mg/m3, Ceiling
Other Exposure Limits: Not Available
CAS No.: 1310-73-2
Colored with Acid Yellow Dye #73, Pylam, Uranine Conc 24482

2. PHYSICAL DATA

Boiling Point: 145° C
Freezing Point: Not Available
Vapor Pressure: 6.3 mm Hg @ 40° C
Vapor Density (Air = 1): Not Applicable
Solubility in Water: 100%
Water Content: 50%
Specific Gravity (Water = 1): 1.53
pH in Solution: 14
Appearance: Clear yellow solution
Odor: None

3. FIRE AND EXPLOSION DATA

Flash Point: Not Applicable
Flammable Limits: Not Applicable
Auto-ignition: Not Applicable
Extinguisher Media: Not Applicable
Special Fire Fighting Procedures: Not Flammable
Unusual Fire and Explosion Hazards: Reacts with some metals forming flammable hydrogen gas.

4. REACTIVITY DATA

Stability: Normally stable
Incompatibility (Materials to Avoid): Chlorinated and fluorinated hydrocarbons (ie chloroform, difluoroethane), acetaldehyde, acrolein, aluminum, chlorine trifluoride, hydroquinone, maleic anhydride, phosphorous pentoxide and terahydrofuran.
Hazardous Decomposition Products: Will not decompose
Hazardous Polymerization: Will not occur
Corrosivity: Extremely corrosive to human tissue – skin, eyes, etc.; corrosive to some metals including aluminum

5. HEALTH HAZARDS

Signs and Symptoms of Exposure:

Inhalation: Inhalation of mist can cause mild irritation at 2 mg/m3. More severe burns and damage to the upper respiratory tract can occur at higher concentrations.
Eyes: Major Potential Hazard – liquid in the eye can cause severe destruction and blindness. These effects can occur rapidly affecting all parts of the eye.
Skin: Major Potential Hazard – contact with the skin can cause severe burns with deep ulcerations.
Ingestion: *Can cause severe burns to mouth and digestive tract, and can be fatal.*
Physiological Effects:
Oral: LD_{50}: rat >90 mL/kg
Skin: Severe Irritant
Eye: Severe Irritant
Medical Conditions Aggravated by Exposure: None known
Carcinogen Listing: None known

6. ROUTES OF ENTRY AND FIRST AID

Inhalation: *Remove to fresh air.*
Eyes: Immediately flush with water for at least 15 minutes and seek medical attention.
Skin: Remove clothing; Immediately flush with water for at least 15 minutes and seek medical attention.
Ingestion: If conscious, give large quantities of water to dilute caustic. Do not induce vomiting.

7. SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Transportation
Designation: UN 1824
Container: Polyethylene recommended
Label: Corrosive
Storage: Store in tightly closed containers away from water and incompatible materials. Avoid high temperatures. Avoid eye and skin contact.
Other Precautions: Do not breathe mist. Do not taste or swallow. Wash thoroughly after handling and before eating, drinking, or smoking.
Steps to Take in Case of Spill:
Contain, dilute, neutralize and flush to sanitary sewer.
Waste Disposal: Neutralize and sewer in accordance with federal, state, and local regulations.

8. PERSONAL PROTECTION

Ventilation: Normal ventilation usually adequate.
Respiratory Protection: Respirator or mask recommended for mist.
Skin Protection: Rubber gloves and safety apron required.
Eye Protection: Face shield and safety goggles required.

9. NOTES

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Certificate of Analysis

Final Report

Laboratory Order ID 10040393

Client Name:	Dept Of Military Affairs Building 316 Fort Pickett Blackstone, VA 23824	Date Received: Date Issued:	April 21, 2010 April 30, 2010
Submitted To:	Dave Short	Project Number	FEBRS-004
Client Site I.D.	Float Eng Bridge Powplu Site	Purchase Order	NA

Sample Summary List

Laboratory Sample ID	Sample ID	Sample Date	Receive Date
10040393-001	FEBRS-004	04/21/2010	04/21/2010

Ted Soyars
Laboratory Manager

End Notes:

The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a dry weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

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Certificate of Analysis

Final Report

Laboratory Order ID 10040393

Client Name: Dept 0f Military Affairs
Building 316 Fort Pickett
Blackstone, VA 23824

Date Received: April 21, 2010
Date Issued: April 30, 2010

Submitted To: Dave Short

Project Number FEBRS-004

Client Site I.D. Float Eng Bridge Powplu Site

Purchase Order NA

Analytical Results

Sample I.D.: FEBRS-004

Laboratory Sample I.D.: 10040393-001

Date/Time Sampled: 04/21/10 10:20

Parameter	Method	Sample Results	Qual	Rep Limit	Analysis Date/Time	Analyst
Fecal Coliform	SM18/9221E	< 2 mpn/100mL		2	04/21/10 16:00	WBP
Aluminum	EPA200.7/R4.4	0.7212 mg/L		0.05	04/29/10 13:24	MWL
Antimony	EPA200.9/R2.2	< 0.005 mg/L		0.005	04/24/10 0:28	WBP
Arsenic	EPA200.9/R2.2	< 0.005 mg/L		0.005	04/28/10 18:20	WBP
Barium	EPA200.7/R4.4	0.0246 mg/L		0.01	04/29/10 13:24	MWL
Beryllium	EPA200.9/R2.2	< 0.0003 mg/L		0.0003	04/28/10 15:34	CGT
Boron	EPA200.7/R4.4	< 0.05 mg/L		0.05	04/29/10 13:24	MWL
Cadmium	EPA200.9/R2.2	< 0.0003 mg/L		0.0003	04/28/10 11:46	WBP
Chromium	EPA200.9/R2.2	0.0010 mg/L		0.001	04/30/10 12:17	WBP
Cobalt	EPA200.7/R4.4	< 0.01 mg/L		0.01	04/29/10 13:24	MWL
Copper	EPA200.9/R2.2	0.0483 mg/L		0.003	04/26/10 10:42	WBP
Iron	EPA200.7/R4.4	1.15 mg/L		0.01	04/29/10 13:24	MWL
Lead	EPA200.7/R4.4	0.0153 mg/L		0.01	04/29/10 13:24	MWL
Magnesium	EPA200.7/R4.4	2.38 mg/L		0.01	04/29/10 13:24	MWL
Manganese	EPA200.7/R4.4	0.0683 mg/L		0.01	04/29/10 13:24	MWL
Mercury	EPA245.1/R3.0	< 0.0002 mg/L		0.0002	04/26/10 10:21	WBP
Molybdenum	EPA200.7/R4.4	< 0.05 mg/L		0.05	04/29/10 13:24	MWL
Nickel	EPA200.7/R4.4	0.0113 mg/L		0.01	04/29/10 13:24	MWL
Selenium	EPA200.9/R2.2	< 0.003 mg/L		0.003	04/27/10 13:20	WBP
Silver	EPA200.7/R4.4	< 0.01 mg/L		0.01	04/29/10 13:24	MWL
Thallium	EPA200.9/R2.2	< 0.002 mg/L		0.002	04/27/10 3:20	CGT
Tin	EPA200.7/R4.4	< 0.02 mg/L		0.02	04/28/10 13:43	CGT
Titanium	EPA200.7/R4.4	< 0.05 mg/L		0.05	04/29/10 13:24	MWL
Zinc	EPA200.7/R4.4	0.0283 mg/L		0.01	04/29/10 13:24	MWL
ADMI Color pH as received	SM18/2120E	80.9 ADMI Units		25	04/22/10 14:48	JPV
ADMI Color pH = 7.6	SM18/2120E	78.4 ADMI Units		25	04/22/10 14:48	JPV
Ammonia	SM18/4500-NH3 F	< 0.1 mg/L		0.1	04/22/10 13:56	JPV
BOD	SM18/5210B	< 2 mg/L		2	04/22/10 9:50	KAA
Bromide	EPA300.0/R2.1	< 1 mg/L		1	04/27/10 11:59	CL

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Certificate of Analysis

Final Report

Laboratory Order ID 10040393

Client Name: Dept Of Military Affairs
Building 316 Fort Pickett
Blackstone, VA 23824

Date Received: April 21, 2010
Date Issued: April 30, 2010

Submitted To: Dave Short
Project Number FEBRS-004

Client Site I.D. Float Eng Bridge Powplu Site
Purchase Order NA

Analytical Results

Sample I.D.: FEBRS-004
Laboratory Sample I.D.: 10040393-001
Date/Time Sampled: 04/21/10 10:20

Parameter	Method	Sample Results	Qual	Rep Limit	Analysis Date/Time	Analyst
Cyanide	Kelada-01	< 0.01 mg/L		0.01	04/26/10 15:41	LMT
COD	EPA410.4/R2.0	22.5 mg/L		10	04/22/10 7:40	JPV
Fluoride	EPA300.0/R2.1	< 0.1 mg/L		0.1	04/27/10 11:59	CL
Nitrate	Calc.	< 0.1 mg/L		0.1	04/21/10 11:04	JPV
Nitrate+Nitrite	SM18/4500-NO3 F	< 0.1 mg/L		0.1	04/26/10 14:28	JPV/SLH
Nitrite	SM18/4500-NO2 B	< 0.05 mg/L		0.05	04/21/10 11:04	JPV
Total Organic Nitrogen (calc)	Calc.	0.5 mg/L		0.2	04/22/10 13:56	JPV
Oil and Grease	EPA1664A	< 10 mg/L		10	04/23/10 15:30	JPV
Phosphorus, Total	SM18/4500-P E	0.06 mg/L		0.01	04/27/10 9:15	JPV/TJG
TKN	EPA351.2/R2.0	0.5 mg/L		0.2	04/23/10 12:51	LMT
TSS	SM18/2540D	1.1 mg/L		1	04/26/10 9:40	JPV/TJG
Total Organic Carbon (TOC)	SM18/5310C	8.1 mg/L		1	04/26/10 12:56	BHW

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Laboratory Order ID 10040393

Client Name: Dept Of Military Affairs
Building 316 Fort Pickett
Blackstone, VA 23824

Date Received: April 21, 2010
Date Issued: April 30, 2010

Submitted To: Dave Short
Project Number FEBRS-004

Client Site I.D. Float Eng Bridge Powplu Site
Purchase Order NA

Summary of Analytical QC Batches

QC Batch ID	Method	Sample List
QC100422026	EPA410.4/R2.0	10040393-001
QC100422039	SM18/4500-NO2 B	10040393-001
QC100422046	SM18/9221E	10040393-001
QC100423016	SM18/4500-NH3 F	10040393-001
QC100423024	EPA351.2/R2.0	10040393-001
QC100426026	EPA200.9/R2.2	10040393-001
QC100426038	EPA200.9/R2.2	10040393-001
QC100426042	EPA1664A	10040393-001
QC100426045	EPA245.1/R3.0	10040393-001
QC I	Parameter	Qualifier Comments
MS	Mercury	M PDS passed
MSD	Mercury	M PDS passed
QC100426046	Kelada-01	10040393-001
QC100427010	SM18/5310C	10040393-001
QC100427012	SM18/4500-NO3 F	10040393-001
QC100427016	EPA200.9/R2.2	10040393-001
QC100427017	SM18/5210B	10040393-001
QC100428004	SM18/2540D	10040393-001
QC100428006	EPA200.9/R2.2	10040393-001
QC100428009	SM18/4500-P E	10040393-001
QC100428010	EPA300.0/R2.1	10040393-001
QC100428024	EPA200.7/R4.4	10040393-001
QC100428032	EPA200.9/R2.2	10040393-001
QC100428034	SM18/2120E	10040393-001
QC100429005	EPA200.9/R2.2	10040393-001
QC100429024	EPA200.9/R2.2	10040393-001
QC100429041	EPA200.7/R4.4	10040393-001
QC100430023	EPA200.9/R2.2	10040393-001

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Certificate of Analysis

Final Report

Laboratory Order ID 10040393

Client Name:	Dept Of Military Affairs Building 316 Fort Pickett Blackstone, VA 23824	Date Received: Date Issued:	April 21, 2010 April 30, 2010
Submitted To:	Dave Short	Project Number	FEBRS-004
Client Site I.D.	Float Eng Bridge Powplu Site	Purchase Order	NA

Qualifier Defination

Qualifier	Description
M	Matrix spike recovery is outside established acceptance limits

043020101405

AIR WATER & SOIL Laboratories, Inc.
2103A NORTHAMPTON STREET
RICHMOND, VIRGINIA 23230
(804) 358-8295 PHONE
(804)358-8297 FAX

CHAIN OF CUSTODY

PAGE 1 OF 1

CLIENT NAME: Dept of Military Affairs	PROJECT NAME: FEBRS-004
CLIENT CONTACT: Dave Short	SITE NAME: Float Eng Bridge Powplu Site
CLIENT ADDRESS: MTC Fort Pickett, Bldg T-232, Blackstone, VA 23824	PROJECT NUMBER: FEBRS-004
CLIENT PHONE NUMBER: 434-292-2144 or 434-298-8734	P.O. NUMBER: 10 CREC070
CLIENT FAX NUMBER: 434-292-2801	REGULATORY AUTHORITY: VDEQ
Is sample for compliance reporting? (YES) NO	Is sample from a chlorinated supply? YES (NO)	PWS#
SAMPLER NAME (PRINT): David Short	SAMPLER SIGNATURE:	Turn Around Time: 5 Day(s)

CLIENT SAMPLE I.D.	Date Sampled	Time Sampled	Number of Containers	Grab	Composite	Field Filtered (Dissolved Metals)	MATRIX: Ground Water / Surface Water	MATRIX: Waste Water / Storm Water	MATRIX: Drinking Water	MATRIX: Soil	MATRIX: Solids	MATRIX: Other	ANALYSIS: TOC DRO 21-Apr-10 1205	ANALYSIS: Fecal Chloroform	ANALYSIS: Ammonia / COD	ANALYSIS: Metals	ANALYSIS: TSS	ANALYSIS: BOD	ANALYSIS: See Attached List - Highlighted Tests	COMMENTS
1) FEBRS-004	21-Apr-10	10:20 AM	011	X				X					X	X	X	X	X	X		PLEASE NOTE PRESERVATIVE(S)
2)																				
3)																				
4)																				
5)																				
6)																				
7)																				
8)																				
9)																				
10)																				

	DATE / TIME		DATE / TIME
RELINQUISHED: David Short	21-Apr-10 1316	RECEIVED: M. A. Thomas	21-APR 1316
RELINQUISHED: M. A. Thomas	21-APR 1507	RECEIVED: Sylvia A	4/21/10 1507
RELINQUISHED:	DATE / TIME	RECEIVED:	DATE / TIME

LAB USE ONLY — COOLER TEMP °C:

DMA 10040393

Float Eng Bridge Powplu Site DUE: 5 Days

Recd: 04/21/10

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DMA **10040393**
Float Eng Bridge Powplu Site
DUE: 5 Days
Recd: 04/21/10

Sample Conditions Checklist

Opened by: (print) GW **Lab ID No.:**
(sign) GW **Date Cooler Opened:** 4/21/10

		YES	NO	N/A
1.	How were samples received? Fed Ex ☐ UPS ☐ Courier ☐ Walk In ☑			
2.	Were custody seals used?	☐	☐	☑
3.	If yes, are custody seals unbroken and intact at the date and time of arrival?	☐	☐	☐
4.	Are the custody papers filled out completely and correctly?	☑	☑	☐
5.	Do all bottle labels agree with custody papers?	☑	☐	☐
6.	Are the samples received on ice?	☑	☐	☐
7.	Is the temperature blank or representative sample within acceptable limits? (4 degrees Celsius +/-2)	☑	☐	☐
8.	Are all samples within holding time for requested tests?	☑	☐	☐
9	Is a sufficient amount of sample provided to perform the tests indicated?	☑	☐	☐
10	Are all samples in proper containers for the analyses requested?	☑	☐	☐
11	Are all samples appropriately preserved for the analyses requested?	☑	☐	☐
12	Are all volatile organic containers free of headspace?	☐	☐	☐

COMMENTS

Form 2 C with all requested tests rec'd. Dave Shaut requested all highlighted tests to be run.

GW
4/21/10

AIR WATER & SOIL LABORATORIES, INC.

pH Preservation Log

Order ID 10040393

Date Performed: 4/21/10

Analyst Performing Check: GW

Sample ID	Container ID	Metals			Cyanide			Sulfide			Ammonia			TKN			Phos, Tot			NO3+NO2			DRO			COD					
		pH as Received		Final pH (If adjust.)	pH as Received		Final pH (If adjust.)	pH as Received		Final pH (If adjust.)	pH as Received		Final pH (If adjust.)	pH as Received		Final pH (If adjust.)	pH as Received		Final pH (If adjust.)	pH as Received		Final pH (If adjust.)	pH as Received		Final pH (If adjust.)	pH as Received		Final pH (If adjust.)	pH as Received		Final pH (If adjust.)
		< 2	Other		> 12	Other		> 9	Other		< 2	Other		< 2	Other		< 2	Other		< 2	Other		< 2	Other		< 2	Other			Other	
001	01				✓																										
001	03	✓																													
001	10										✓															✓					
001	11																✓			✓											

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Certificate of Analysis

Final Report

Laboratory Order ID 10040422

Client Name:	Dept Of Military Affairs Building 316 Fort Pickett Blackstone, VA 23824	Date Received: Date Issued:	April 22, 2010 April 30, 2010
Submitted To:	Dave Short	Project Number	FEBRS-005
Client Site I.D.	Float Eng Bridge Rowpu Site	Purchase Order	NA

Sample Summary List

Laboratory Sample ID	Sample ID	Sample Date	Receive Date
10040422-001	FEBRS-005	04/22/2010	04/22/2010

Ted Soyars
Laboratory Manager

End Notes:

The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a dry weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

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Certificate of Analysis

Final Report

Laboratory Order ID 10040422

Client Name: Dept Of Military Affairs
Building 316 Fort Pickett
Blackstone, VA 23824

Date Received: April 22, 2010
Date Issued: April 30, 2010

Submitted To: Dave Short
Project Number FEBRS-005

Client Site I.D. Float Eng Bridge Rowpu Site
Purchase Order NA

Analytical Results

Sample I.D.: FEBRS-005
Laboratory Sample I.D.: 10040422-001
Date/Time Sampled: 04/22/10 12:41

Parameter	Method	Sample Results	Qual	Rep Limit	Analysis Date/Time	Analyst
Fecal Coliform	SM18/9221E	11 mpn/100mL		2	04/22/10 16:30	WBP
Aluminum	EPA200.7/R4.4	1.39 mg/L		0.05	04/30/10 14:19	MWL
Antimony	EPA200.9/R2.2	< 0.005 mg/L		0.005	04/30/10 14:33	WBP
Arsenic	EPA200.9/R2.2	< 0.005 mg/L		0.005	04/28/10 17:41	WBP
Barium	EPA200.7/R4.4	0.0662 mg/L		0.01	04/30/10 14:19	MWL
Beryllium	EPA200.9/R2.2	0.0006 mg/L		0.0003	04/28/10 16:08	CGT
Boron	EPA200.7/R4.4	< 0.05 mg/L		0.05	04/30/10 14:19	MWL
Cadmium	EPA200.9/R2.2	< 0.0003 mg/L		0.0003	04/28/10 12:22	WBP
Chromium	EPA200.9/R2.2	0.0014 mg/L		0.001	04/30/10 13:12	WBP
Cobalt	EPA200.7/R4.4	< 0.01 mg/L		0.01	04/30/10 14:19	MWL
Copper	EPA200.9/R2.2	0.0117 mg/L		0.003	04/29/10 18:31	WBP
Iron	EPA200.7/R4.4	2.27 mg/L		0.01	04/30/10 14:19	MWL
Lead	EPA200.7/R4.4	< 0.01 mg/L		0.01	04/30/10 14:19	MWL
Magnesium	EPA200.7/R4.4	5.55 mg/L		0.01	04/30/10 14:19	MWL
Manganese	EPA200.7/R4.4	0.2497 mg/L		0.01	04/30/10 14:19	MWL
Mercury	EPA245.1/R3.0	< 0.0002 mg/L		0.0002	04/26/10 10:32	WBP
Molybdenum	EPA200.7/R4.4	< 0.05 mg/L		0.05	04/30/10 14:19	MWL
Nickel	EPA200.7/R4.4	< 0.01 mg/L		0.01	04/30/10 14:19	MWL
Selenium	EPA200.9/R2.2	< 0.003 mg/L		0.003	04/27/10 13:54	WBP
Silver	EPA200.7/R4.4	< 0.01 mg/L		0.01	04/30/10 14:19	MWL
Thallium	EPA200.9/R2.2	< 0.002 mg/L		0.002	04/30/10 12:14	WBP
Tin	EPA200.7/R4.4	< 0.02 mg/L		0.02	04/28/10 14:06	CGT
Titanium	EPA200.7/R4.4	< 0.05 mg/L		0.05	04/30/10 14:19	MWL
Zinc	EPA200.7/R4.4	0.0123 mg/L		0.01	04/30/10 14:19	MWL
ADMI Color pH as received	SM18/2120E	169 ADMI Units		25	04/22/10 14:48	JPV
ADMI Color pH = 7.6	SM18/2120E	165 ADMI Units		25	04/22/10 14:48	JPV
Ammonia	SM18/4500-NH3 F	< 0.1 mg/L		0.1	04/28/10 13:27	SLH
BOD	SM18/5210B	2.3 mg/L		2	04/23/10 9:30	KAA
Bromide	EPA300.0/R2.1	< 1 mg/L		1	04/27/10 12:12	CL

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Final Report

Laboratory Order ID 10040422

Client Name: Dept Of Military Affairs
Building 316 Fort Pickett
Blackstone, VA 23824

Date Received: April 22, 2010
Date Issued: April 30, 2010

Submitted To: Dave Short
Project Number FEBRS-005

Client Site I.D. Float Eng Bridge Rowpu Site
Purchase Order NA

Analytical Results

Sample I.D.: FEBRS-005
Laboratory Sample I.D.: 10040422-001
Date/Time Sampled: 04/22/10 12:41

Parameter	Method	Sample Results	Qual	Rep Limit	Analysis Date/Time	Analyst
Cyanide	Kelada-01	< 0.01 mg/L		0.01	04/26/10 15:47	LMT
COD	EPA410.4/R2.0	50.2 mg/L		10	04/28/10 9:30	JPV
Fluoride	EPA300.0/R2.1	0.2 mg/L		0.1	04/27/10 12:12	CL
Nitrate	Calc.	< 0.1 mg/L		0.1	04/22/10 15:58	SLH
Nitrate+Nitrite	SM18/4500-NO3 F	< 0.1 mg/L		0.1	04/26/10 14:34	JPV/SLH
Nitrite	SM18/4500-NO2 B	< 0.05 mg/L		0.05	04/22/10 15:58	SLH
Total Organic Nitrogen (calc)	Calc.	0.7 mg/L		0.2	04/28/10 13:27	SLH
Oil and Grease	EPA1664A	< 10 mg/L		10	04/28/10 10:50	JPV
Phosphorus, Total	SM18/4500-P E	0.05 mg/L		0.01	04/27/10 9:15	JPV/TJG
TKN	EPA351.2/R2.0	0.8 mg/L		0.2	04/29/10 10:32	LMT
TSS	SM18/2540D	3.3 mg/L		1	04/26/10 9:40	JPV/TJG
Total Organic Carbon (TOC)	SM18/5310C	17.6 mg/L		1	04/26/10 20:12	BHW

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Final Report

Laboratory Order ID 10040422

Client Name:	Dept Of Military Affairs Building 316 Fort Pickett Blackstone, VA 23824	Date Received: Date Issued:	April 22, 2010 April 30, 2010
Submitted To:	Dave Short	Project Number	FEBRS-005
Client Site I.D.	Float Eng Bridge Rowpu Site	Purchase Order	NA

Summary of Analytical QC Batches

QC Batch ID	Method	Sample List
QC100423013	SM18/4500-NO2 B	10040422-001
QC100423030	SM18/9221E	10040422-001
QC100426045	EPA245.1/R3.0	10040422-001

QC I	Parameter	Qualifier	Comments
MS	Mercury	M	PDS passed
MSD	Mercury	M	PDS passed

QC100426046	Kelada-01	10040422-001
QC100427012	SM18/4500-NO3 F	10040422-001
QC100427029	SM18/5310C	10040422-001
QC100428004	SM18/2540D	10040422-001
QC100428007	EPA200.9/R2.2	10040422-001
QC100428009	SM18/4500-P E	10040422-001
QC100428010	EPA300.0/R2.1	10040422-001
QC100428025	EPA200.7/R4.4	10040422-001
QC100428029	SM18/4500-NH3 F	10040422-001
QC100428033	EPA200.9/R2.2	10040422-001
QC100428034	SM18/2120E	10040422-001
QC100428035	SM18/5210B	10040422-001
QC100429006	EPA200.9/R2.2	10040422-001
QC100429013	EPA410.4/R2.0	10040422-001
QC100429021	EPA351.2/R2.0	10040422-001
QC100429023	EPA200.9/R2.2	10040422-001
QC100429038	EPA1664A	10040422-001
QC100430009	EPA200.9/R2.2	10040422-001
QC100430024	EPA200.9/R2.2	10040422-001
QC100430032	EPA200.9/R2.2	10040422-001
QC100430034	EPA200.9/R2.2	10040422-001
QC100430039	EPA200.7/R4.4	10040422-001

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Client Name:	Dept Of Military Affairs Building 316 Fort Pickett Blackstone, VA 23824	Date Received: Date Issued:	April 22, 2010 April 30, 2010
Submitted To:	Dave Short	Project Number	FEBRS-005
Client Site I.D.	Float Eng Bridge Rowpu Site	Purchase Order	NA

QC I	Parameter	Qualifier	Comments
MS	Aluminum	M	
MS	Iron	M	
MS	Magnesium	M	

Qualifier Definations

Qualifier	Description
M	Matrix spike recovery is outside established acceptance limits. Concentrations are estimated.

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CHAIN OF CUSTODY

PAGE 1 OF 1

CLIENT NAME: Dept of Military Affairs	PROJECT NAME: FEBRS-005
CLIENT CONTACT: Dave Short	SITE NAME: Float Eng Bridge ROWPU Site
CLIENT ADDRESS: MTC Fort Pickett, Bldg T-234 Blackstone, VA 23824	PROJECT NUMBER: FEBRS-005
CLIENT PHONE NUMBER: 434-292-2144 or 434-298-8734	P.O. NUMBER: 10CRE0074
CLIENT FAX NUMBER: 434-292-2901 EMAIL: david.t.short@us.army.mil	REGULATORY AUTHORITY: VDEQ Form 2C
Is sample for compliance reporting? (YES) NO	Is sample from a chlorinated supply? YES (NO) PWS I.D. #:
SAMPLER NAME (PRINT): David Short SAMPLER SIGNATURE: [signature]	Turn Around Time: Stand Day(s)

Have ammonia and TKN samples been verified to be dechlorinated at the time of sampling?: YES NO

CLIENT SAMPLE I.D.	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Number of Containers	Grab	Composite	Field Filtered (Dissolved Metals)	Ground Water / Surface Water	Waste Water / Storm Water	Drinking Water	Soil	Solids	Other	*See Attached Form 2C Analysis list						COMMENTS: Quote I.D.: PLEASE NOTE PRESERVATIVE(S) or PUMP RATE (L/min)
1) FEBRS-005	22-Apr-10	1241			011	X				X					X						
2)																					
3)																					
4)																					
5)																					
6)																					
7)																					
8)																					
9)																					
10)																					

RELINQUISHED:	DATE / TIME	RECEIVED:	DATE / TIME
[signature]	22 APR 10 2:15	M. W. Moore [signature]	22 APR 14:15
[signature]	22 APR 16:10	[signature]	4/22/10 1610

QC Data Package: Level I ☐ Level II ☐ Level III ☐ Level IV ☐

LAB USE ONLY COOLER TEMP ____ °C

DMA 10040422
Float Eng Bridge Rowpu Site DUE: 5 Days
Recd: 04/22/10

9.xls

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DMA **10040422**
Float Eng Bridge Rowpu Site
DUE: 5 Days
Recd: 04/22/10

Sample Conditions Checklist

Opened by: (print) GW **Lab ID No.:**
(sign) [signature] **Date Cooler Opened:** 4/22/10

		YES	NO	N/A
1.	How were samples received? Fed Ex ☐ UPS ☐ Courier ☐ Walk In ☑			
2.	Were custody seals used?	☐	☐	☑
3.	If yes, are custody seals unbroken and intact at the date and time of arrival?	☐	☐	☑
4.	Are the custody papers filled out completely and correctly?	☑	☐	☐
5.	Do all bottle labels agree with custody papers?	☑	☐	☐
6.	Are the samples received on ice?	☑	☐	☐
7.	Is the temperature blank or representative sample within acceptable limits? (4 degrees Celsius +/-2)	☑	☐	☐
8.	Are all samples within holding time for requested tests?	☑	☐	☐
9	Is a sufficient amount of sample provided to perform the tests indicated?	☑	☐	☐
10	Are all samples in proper containers for the analyses requested?	☑	☐	☐
11	Are all samples appropriately preserved for the analyses requested?	☑	☐	☐
12	Are all volatile organic containers free of headspace?	☐	☐	☑

COMMENTS